CLAIMS

1. A microporous polyolefin film which comprises 5 to 95 wt% of polyethylene (A) having a viscosity average molecular weight (Mv) of 2,000,000 or more, a first melting-peak signal height as determined by DSC (differential scanning calorimetry) of 3.0 mW/mg or more, a specific surface area of 0.7 m^2/g or more, and an average particle size of 1 to 150 μm and 95 to 5 wt% of polyethylene (B) having an Mw of more than 10,000 and less than 200,000, wherein the Mv ratio of the component (A) to the component (B), (A)/(B), is 10 or more, the film as a whole has a molecular weight of 300,000 to 1,500,000, and the film has a fuse temperature of 120 to 140°C, a film breakage temperature of 150°C or more, and a ratio of the piercing strength at 140°C to the piercing strength at 25°C of 0.01 to 0.25.

2. The microporous polyolefin film according to claim 1, wherein the fuse temperature is 120 to 135°C.

3. The microporous polyolefin film according to claim 1, wherein the fuse temperature is 120 to 133°C.

4. The microporous polyolefin film according to any of claims 1 to 3 having a short-circuit temperature of 152°C or more.

5. The microporous polyolefin film according to any of claims 1 to 4 having a thermal shrinkage starting temperature in a TD direction of 90°C or more.

6. The microporous polyolefin film according to

claim 5 having a thermal shrinkage starting temperature in the TD direction of 100°C or more.

7. The microporous polyolefin film according to claim 6 having a thermal shrinkage starting temperature in the TD direction of 110°C or more.

8. The microporous polyolefin film according to any of claims 1 to 7 having a film thickness of 5 to 24 μm.

9. The microporous polyolefin film according to any of claims 1 to 7 having a porosity of 30 to 60%.

10. The microporous polyolefin film according to any of claims 1 to 7 having a 25°C piercing strength of 3 to 10 N/20 μm.

11. A process for producing a microporous polyolefin film which has a molecular weight of 300,000 to 1,500,000 as a whole of the film, a fuse temperature of 120 to 140°C, a film breakage temperature of 150°C or more, and a ratio of the piercing strength at 140°C to the piercing strength at 25°C of 0.01 to 0.25, the process comprising kneading a mixture comprising a polyolefin composition comprising 5 to 95 wt% of polyethylene (A) having a viscosity average molecular weight (Mv) of 2,000,000 or more, a first melting-peak signal height as determined by DSC (differential scanning calorimetry) of 3.0 mW/mg or more, a specific surface area of 0.7 m^2/g or more and an average particle size of 1 to 150 μm and 95 to 5 wt% of polyethylene (B) having an Mw of more than 10,000 and less than 200,000,

wherein the Mv ratio of the component (A) to the component (B), (A)/(B), is 10 or more, with a plasticizer; extruding the kneaded product and then molding the product into a gel-like sheet to cool and solidify the sheet; drawing the resulting gel-like sheet; extracting the plasticizer to dry the sheet; and thermally fixing the film, wherein the thermal fixation step comprises a step of drawing the film in a TD direction after extracting the plasticizer and a subsequent step of thermally shrinking the film in the TD direction with reference to film width after the drawing step.

12. The process according to claim 11, wherein the drawing step is a step of drawing the film after extracting the plasticizer by at least 20% in the TD direction and the thermal shrinkage step is a step of thermally shrinking the film after extracting the plasticizer by at least 10% in the TD direction with reference to the film width after the drawing step.